

**What is claimed is:**

1. An acetabular reamer for cutting a required cut shape, comprising a cutting shell having a series of cutting teeth thereon of a quantity to substantially reduce a cutting pressure on each tooth as well as to reduce a size of a typical chip generated upon cutting, wherein  
5 substantially all the teeth are doubly curved, having a matched arc cutting edge of substantial length, the matched arc cutting edge having a cutting profile which substantially matches a profile of the shape to be cut, thereby reducing a number of teeth required to cut the shape.
- 10 2. The reamer of claim 1 wherein a generally circular hole precedes the cutting edges as the reamer is rotated for cutting.
3. The reamer of claims 1 to 2, wherein the series of cutting teeth are arranged uniformly and  
15 spaced apart on the cutting shell.
4. The reamer of claims 1 to 3, wherein the cutting teeth are arranged in a spiral arrangement on the cutting shell.
- 20 5. The reamer of claims 1 to 4, wherein the cutting shell is a portion of a sphere in which the length of the cutting edges are selected so as to completely cut the shape, thereby potentially using less teeth than permissible with a cutting shell that has a more complete hemispherical shape.
- 25 6. The reamer of claim 5, wherein the cutting shell is a hemisphere or portion thereof.